LEADING EDGE SERVICES COLLABORATIVE APPLICATIONS TEAM

Dan C. Boger, Professor
Command, Control, and Communications Academic Group
Sponsor: Defense Advanced Research Projects Agency

OBJECTIVE: This proposal covers projects by a collaborative team of researchers and students which utilize the capabilities of the DARPA/DISN leading edge services network and the Naval Postgraduate School technology laboratory.

DoD KEY TECHNOLOGY AREA: Modeling and Simulation

KEYWORDS: Networking, Communications, Databases, Concepts of Operation

THESIS SUPPORT FOR THE OPERATIONAL SUPPORT OFFICE

Dan C. Boger, Professor
Command, Control, and Communications Academic Group
Sponsor: Secretary of the Air Force

OBJECTIVE: This proposal covers projects which will be carried out by master's thesis students in a variety of curricula at NPS which will focus on improving information support to the Joint Force Commander.

DoD KEY TECHNOLOGY AREA: Sensors

KEYWORDS: Concepts of Operation, Databases, Communications, Networking, Sensors

NEAR-REAL-TIME MISSION UPDATES VIA THE GLOBAL BROADCASTING SYSTEM (GBS)

Dan C. Boger, Professor
Command, Control, and Communications Academic Group
Sponsor: Naval Engineering Logistics Office

OBJECTIVE: Perform proof-of-concept of potential scenario simulation and data/video transmission via GBS of Near-Real-Time mission updates for quick reaction teams utilizing the capabilities of the Naval Postgraduate School's Systems Technology Laboratory.

DoD KEY TECHNOLOGY AREA: Modeling and Simulation

KEYWORDS: Networking, Communications, Databases, Concepts of Operation

TACTICAL DECISION MAKING UNDER STRESS

Susan Hutchins, Research Assistant
Command, Control, and Communications Academic Group
Sponsor: Space and Naval Warfare Systems Center–San Diego

OBJECTIVE: The objective of the TADMUS program is to apply recent developments in decision theory, individual and team training, and information display to the problem of enhancing tactical decision quality under conditions of stress. Products of this research will include a decision support system (DSS) and general principles for advanced decision support systems, a variety of training strategies that will attenuate the effects of stress on team performance, and human-system interaction concepts which maximize the effectiveness of tactical decision aids under stressful conditions; general principles will be developed that will be applicable to other warfare areas. Experimentation is required to assess the effectiveness of the newly developed decision support system.

DoD KEY TECHNOLOGY AREA: Human System Interfaces

KEYWORDS: Human Factors, Decision Theory, C3, Decision Support System, Human System interface

HUMAN CENTERED DESIGN TOOLS

Susan Hutchins, Research Assistant
Command, Control, and Communications Academic Group
Sponsor: Naval Submarine Medical Research Lab

OBJECTIVE: The objectives of this project are to define the behavioral components of the command, information and control (CIC) suite (e.g., Cognitive tasks and decision making, review, refine or develop effective assessment instruments of human system performance in the CIC, apply existing and new models of the CIC with the purpose of enhancing efficiency and reliability while reducing manning through automation, review existing system design processes with respect to determining the utilization of humans and human systems interfaces, define a human-centered design tool interface that incorporates the results to improve the process of designing complex systems.

DoD KEY TECHNOLOGY AREA: Human System Interface

KEYWORDS: Human Factors, Automation, Decision Theory, Command and Control, Decision Support System

ANALYTICAL SUPPORT FOR CONVECTIONAL AMMUNITION PROGRAM

William Kemple, Associate Professor
Command, Control, and Communications Academic Group
Sponsor: Naval Surface Warfare Center-Crane Division

OBJECTIVE: To provide analyst support to convectional ammunition program office by implementing NSFS, AAW and ASuW architectures in the Naval Simulation System (NSS). Support will include the developing data sources, devising documentation methods, creating input databases, and performing analyses in support of program review 1999 (PR99).

DoD KEY TECHNOLOGY AREA: Modeling and Simulation

KEYWORDS: Modeling and Simulation, Assessment

ADAPTIVE ARCHITECTURES FOR COMMAND AND CONTROL (A2C2)

William Kemple, Associate Professor
Command, Control, and Communications Academic Group
Sponsor: Office of Naval Research and Naval Postgraduate School

OBJECTIVE: To gain insight into the issues of adaptation in joint C2 architectures. To develop theories of C2, i.e., "Congruence" of task and organization. To use modeling to identify near-optimal organizational decisions for CS tasks. To test the theories and models in a series of experiments. To support implementation of adaptable C2 architectures.

DoD KEY TECHNOLOGY AREA: Human System Interfaces

KEYWORDS: Command and Control, Joint Operations, Organizational Experiments

COMMAND, CONTROL AND COMMUNICATION (C3) ANALYSIS TECHNIQUES

William Kemple, Associate Professor
Command, Control, and Communications Academic Group
Sponsor: U.S. Marine Corps Systems Command

OBJECTIVE: To continue research in support of the Marine Corps concept based requirements system and the combat development process by identifying and developing a set of SPATIO-Temporal measures of combat potential appropriate for the MAGTF commander. Implementing a selected subset of the measures as dynamic displays of MTWS. Conducting a small experiment using officer students as commanders to assess the utility of the displays. Examining other mutually agreed upon issues of interest to the Marine Corps concept based requirements system and the combat development process.

DoD KEY TECHNOLOGY AREA: Command, Control, and Communications

KEYWORDS: Command, Control, and Communications, MOES, Combat Potential

NAVAL POSTGRADUATE SCHOOL SUPPORT TO JWID 97

William Kemple, Associate Professor
Command, Control, and Communications Academic Group
Sponsors: Space and Naval Warfare Systems Command

OBJECTIVE: Provide support to the U.S. Navy JWID 97 program office. Tasks include assisting in the assessment of JWID 97 demonstrations and providing input into the JWID 97 final report.

DoD KEY TECHNOLOGY AREA: Command, Control, and Communications

KEYWORDS: C4I System Evaluation, and C4I MOE'S

JOINT COMMAND, CONTROL, AND COMMUNICATIONS CHAIR PROFESSORSHIP

Orin C. Marvel, Visiting Associate Professor
Command, Control, and Communications Academic Group
Sponsor: Defense Information Systems Agency

OBJECTIVE: The Joint C3 Chair Professorship is established to provide conceptual, intellectual and practical expertise to the joint C4I systems students in C4I systems and systems engineering. These duties will include teaching, advising, thesis reading, and laboratory research. The objective shall be to improve the students understanding of command and control techniques, systems, doctrine, personnel, missions, requirements, technologies and systems engineering processes.

DoD KEY TECHNOLOGY AREA: Command, Control, and Communications

KEYWORDS: Command, Control, and Communications, Doctrine, Intelligence

SC-21 CONSULTING SUPPORT

Orin C. Marvel, Visiting Associate Professor
Command, Control, and Communications Academic Group
Sponsor: Naval Sea Systems Command

OBJECTIVE: Perform consulting support and analysis of the human control interface on board a defined SC-21. Coordinate activities with CSACT and ADCOM-21 developments.

DoD KEY TECHNOLOGY AREA: Human Systems Interface

KEYWORDS: SC-21, Human Control Interface

TARGETING SUB-STATE POLITICAL GROUPS

Gordon McCormick, Associate Professor
Command, Control, and Communications Academic Group
Guillermo Owen, Professor
Department of Mathematics
Sponsor: Office of the Secretary of Defense

OBJECTIVE: To develop a rigorous framework for evaluating the dynamics of sub-state political conflict and use this framework to examine the ways in which we might improve our ability to deter, compel, and if necessary, target sub-state groups.

DoD KEY TECHNOLOGY AREA: Other (Sub-State Political Conflict)

KEYWORDS: Sub-State Conflict

RESEARCH ON GLOBAL BROADCAST SYSTEM (GBS) SERVICES

Paul Moose, Associate Professor
Command, Control, and Communications Academic Group
Sponsor: Space and Naval Warfare Systems Center-San Diego

OBJECTIVE: A receive site GBS test bed will be completed in the NPS systems technology laboratory. This will be used to conduct experimental research on critical technical and functional aspects of the GBS service. This year, the research will focus on low cost technology for providing a variable bit rate GBS service to mobile and deploying users.

DoD KEY TECHNOLOGY AREA: Command, Control, and Communications

KEYWORDS: Global Broadcast Service, Satellite Communications

ADAPTIVE COORDINATION FOR FLEXIBLE C3 ORGANIZATIONS

Michael Sovereign, Professor
Command, Control, and Communications Academic Group
Sponsor: Office of Naval Research

OBJECTIVE: This cost proposal covers the NPS portion of the work of the proposal entitled adaptive coordination for C3 flexible organizations. It follows the standard NPS format and cost categories. The NPS portion of the proposed work focuses on tasks 3,4, and 5 described in the companion alphatech-UCONN-NPS Combined technical and management proposal P3800-123. NPS is most extensively involved in the empirical portion of the proposal although all portions are integrated to a considerable extent.

DoD KEY TECHNOLOGY AREA: Human System Interfaces

KEYWORDS: Command and Control, Joint Operations, Organizational Experiments

SIMULATION OF EXPEDITIONARY WARFARE

Michael Sovereign, Professor
Command, Control, and Communications Academic Group
Sponsor: Office of the Secretary of Defense

OBJECTIVE: This proposal initiates a research program to identify simulations that can be adapted to addressing the issues of expeditionary warfare and demonstrating their use in wargaming, tactical development and technology requirements. These simulations will allow the easy visualization of the underlying detailed physical dynamics, lines of sight, coordination of fires, maneuver and logistics upon which these concepts will ultimately depend.

DoD KEY TECHNOLOGY AREA: Other (Wargaming)

KEYWORD: Expeditionary Warfare

CONCEPTS FOR C4ISR AND INFORMATION SUPERIORITY IN HUMANITARIAN ASSISTANCE/DISASTER RELIEF (HA/DR) OPERATIONS

Michael Sovereign, Professor
Command, Control, and Communications Academic Group
Sponsor: National Defense University

OBJECTIVE: Apply Joint Vision 2010 concepts to Military Operations Other Than War in the HA/DR arena. Explore new commercial C4ISR systems to HA/DR requirements for coordination of inter-agency, multi-national, NGO and PVO operations. Produce reports suitable for National Defense University ACTIS publications. Perform work at USPACOM headquarters.

DoD KEY TECHNOLOGY AREA: Command, Control, and Communications

KEYWORDS: Joint Vision 2010, Military Operations Other Than War, C4ISR